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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R8-ES-2018-0042; FXES1113090FEDR–223–FF09E42000]

RIN 1018-BD00

Endangered and Threatened Wildlife and Plants; Reclassification of the Endangered *Layia carnosa* (Beach Layia) to Threatened With Section 4(d) Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are reclassifying the plant beach layia (*Layia carnosa*) from an endangered to a threatened species under the Endangered Species Act of 1973, as amended (Act), due to substantial improvements in the species' overall status since its original listing as endangered in 1992. This action is based on a thorough review of the best scientific and commercial data available, which indicates that beach layia no longer meets the definition of an endangered species under the Act. Beach layia will remain protected as a threatened species under the Act. We are also finalizing a rule under section 4(d) of the Act that provides for the conservation of beach layia.

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF *FEDERAL REGISTER* PUBLICATION].

ADDRESSES: This final rule, supporting documents we used in preparing this rule, and public comments we received are available on the internet at <https://www.regulations.gov> at Docket No. FWS-R8-ES-2018-0042.

FOR FURTHER INFORMATION CONTACT: Tanya Sommer, Field Supervisor, Arcata Fish and Wildlife Office, 1655 Heindon Rd., Arcata, CA 95521; telephone 707–822–7201.

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SUPPLEMENTARY INFORMATION:

Previous Federal Actions

On June 22, 1992, we listed the beach layia as an endangered species (57 FR 27848). On September 29, 1998, we finalized a recovery plan for this and six other coastal species (Service 1998, entire). In 2011, we completed a 5-year review (Service 2011, entire) and concluded that there was evidence to support a decision to reclassify beach layia from an endangered species to a threatened species under the Act. We announced the availability of this review on April 27, 2012 (77 FR 25112).

On September 30, 2020, we proposed to reclassify beach layia from an endangered species to a threatened species with a rule issued under section 4(d) of the Act (“4(d) rule”) to provide for the conservation of beach layia (85 FR 61684). On April 13, 2021, we reopened the public comment period for the proposed rule and announced a public informational meeting and public hearing (86 FR 19184), which we held on April 29, 2021.

Summary of Changes from the Proposed Rule

In this rule, we make certain nonsubstantive, editorial changes to some text that we presented in the proposed rule, and we include a minor amount of new information (e.g., some updated abundance information and new references) that we received or that became available since the proposed rule published. However, this new information did not change our analysis, rationales, or determination for either the reclassification of the beach layia to a threatened species (“downlisting”) or the 4(d) rule for the species.

I. Reclassification Determination

Background

It is our intent to discuss only those topics directly related to downlisting beach layia in this rule. For more information on the species' description, life history, genetics, and habitat, please refer to the May 8, 2018, SSA report (Service 2018, entire), which is a comprehensive assessment of the biological status of beach layia. At the time of listing (57 FR 27848; June 22, 1992), we determined that human-induced disturbances (particularly off-highway vehicle (OHV) activity, but also other disturbances from agriculture, pedestrians, development, etc.) were significant threats to beach layia, resulting in ongoing negative population or rangewide impacts. Thus, we determined that the best available information indicated that the species was in danger of extinction throughout all of its range. Since that time, these activities have been significantly reduced, especially OHV activity, with records of the species demonstrating positive responses in abundance. Additionally, significant areas have been set aside as preserves and conservation areas. After taking into consideration our threats analysis and recovery criteria (Service 1998, pp. 43–48), we have determined that the species no longer meets the Act's definition of an endangered species but does meet the Act's definition of a threatened species (likely to become an endangered species within the foreseeable future). Given this information, the best available scientific and commercial information now indicate that the species has improved to the point that it can be downlisted.

The SSA report provides a thorough account of the species' overall condition currently and into the future. In this discussion, we summarize the conclusions of that assessment, including: (1) The species' description, ecology, habitat, and resource needs; (2) beach layia's current condition, including population abundance, distribution, and factors affecting its viability; and (3) potential future conditions. The full report can be accessed on the internet at <https://www.regulations.gov> under Docket No. FWS-R8-ES-2018-0042.

Species Description

Beach layia is a succulent annual herb belonging to the sunflower family (Asteraceae). Plants range up to 6 inches (in) (15.2 centimeters (cm)) tall and 16 in (40.6 cm) across (Baldwin

et al. 2012, p. 369). Characteristics distinguishing beach layia from similar species include its fleshy leaves; inconspicuous flower heads with short (0.08 to 0.1 in (2 to 2.5 millimeter (mm)) long) white ray flowers (occasionally purple) and yellow disk flowers; and bristles around the top of the one-seeded achene, or dry fruit (Service 1998, p. 43).

Ecology, Habitat, and Resource Needs of Beach Layia

Beach layia germinates during the rainy season between fall and mid-winter, blooms in spring (March to July), and completes its life cycle before the dry season (July to September) (Service 1998, p. 45). Populations tend to be patchy and subject to large annual fluctuations in size and dynamic changes in local distribution associated with the shifts in dune blowouts, remobilization, and natural dune stabilization that occur in the coastal dune ecosystem (Service 1998, p. 45). Beach layia plants often occur where sparse vegetation traps wind-dispersed seeds, but causes minimal shading. Seeds are dispersed by wind mostly during late spring and summer months (Service 1998, p. 45). Additionally, beach layia is self-compatible (i.e., able to be fertilized by its own pollen), is capable of self-pollination, and is visited by a variety of insects that may assist in cross-pollination (Sahara 2000, entire). Although the role of pollinators is currently unclear, sexual reproduction does add to genetic diversity.

Beach layia occurs in open spaces of sandy soil between the low-growing perennial plants in the *Abronia latifolia* – *Ambrosia chamissonis* herbaceous alliance (dune mat) and *Leymus mollis* herbaceous alliance (sea lyme grass patches) (Sawyer *et al.* 2009, pp. 743–745, 958–959). Typically, the total vegetation cover in both communities is relatively sparse, and many annual species, including beach layia, colonize the space between established, tufted perennials. Beach layia can also occur in narrow bands of moderately disturbed habitat along the edges of trails and roads in dune systems dominated by invasive species.

Coastal dune systems are composed of a mosaic of vegetation communities of varying successional stages (see additional discussion in section 4.4 of the SSA report (Service 2018, pp. 9–11)). Beach layia occurs in early to mid-successional communities in areas where sand is

actively being deposited or eroding. Too much sand movement prevents plants from establishing, but areas with some movement on a periodic basis support early successional communities. Movement of sand by wind is essential for the development and sustainability of a dune system. Wind is also important to beach layia specifically because it is the mechanism by which seeds are dispersed. The achenes (a small, dry, one-seeded fruit that does not open to release the seed) have pappus (feathery bristles) that allow them to be carried by wind for a short distance. Although not all seeds may land on suitable habitat, this adaptation allows the small annual to spread across the landscape into uninhabited areas.

As a winter germinating annual, beach layia requires rainfall during the winter months (November through February) for germination and, although it is relatively tolerant to the drought-like conditions of upland dunes, it does need some moisture through the spring to prevent desiccation. Moisture also reduces the risk of burial, as dry sand is more mobile and mortality caused by burial has been documented (Imper 2014, p. 6).

The overall resource needs that beach layia requires in order for individuals to complete their life cycles and for populations to maintain viability are:

- (1) Sandy soils with sparse native vegetation cover,
- (2) Rainfall during the winter germination period,
- (3) Sunlight (full sun exposure for photosynthesis), and
- (4) Unknown degree of cross-pollination (to add to genetic diversity).

Species Distribution and Abundance

For the purposes of our analysis as summarized in our SSA report (Service 2018, entire), we grouped the populations by ecoregions based on average annual rainfall (precipitation is directly correlated with abundance for this species), habitat characteristics, and distance between population centers. The North Coast Ecoregion contains the largest and most resilient populations and receives the highest average annual rainfall. The Central Coast Ecoregion receives less rain than the North Coast Ecoregion but more than the South Coast Ecoregion, and

is comprised of three small populations on the Monterey peninsula that are less resilient due to low abundance, although habitat quality is high at two of the sites. The South Coast Ecoregion, both historically and currently, consists of a single population on the Vandenberg Space Force Base (SFB; formerly Vandenberg Air Force Base). Average annual rainfall varies across the three ecoregions. Rainfall in the North Coast Ecoregion is around 38 in (96 cm), while the Central Coast Ecoregion receives 20 in (51 cm), and the South Coast Ecoregion receives 14 in (36 cm) (National Oceanic and Atmospheric Administration (NOAA) 2017).

Historical distribution of beach layia is similar to that known currently, while abundance values have increased, primarily due to increased survey efforts, amelioration of some threats, and a better understanding of the species' reproduction pattern following years with high amounts of rainfall. The current distribution includes populations spread across dune systems in the following geographic areas (ecoregions) covering more than 500 miles (mi) (805 kilometers (km)) of shoreline in northern, central, and southern California (see figures 7–13 and table 2 in the SSA report (Service 2018, pp. 15–24)):

- North Coast Ecoregion:

Humboldt County—Freshwater Lagoon Spit, Humboldt Bay area, mouth of the Eel River, McNutt Gulch, and mouth of the Mattole River

Marin County—Point Reyes National Seashore

- Central Coast Ecoregion:

Monterey County—Monterey Peninsula

- South Coast Ecoregion:

Santa Barbara County—Vandenberg SFB (located on part of the Guadalupe-Nipomo Dunes)

Of the known historical populations, four are considered extirpated, including the San Francisco population, the Point Pinos population in the Monterey area, and two populations north of the Mad River in Humboldt County. All currently extant populations were known at the

time of listing and when the recovery plan was finalized (1992 and 1998, respectively), with the exception of the Freshwater Lagoon population discovered in 2000, at the far northern extent of the species' range (see table, below). The total number of individuals across the range of the species reported in the recovery plan was 300,000. However, sampling data collected at the Lanphere Dunes that same year yielded an estimate of more than one million plants for that subpopulation alone, which indicates the estimate in the recovery plan was substantially lower than the actual number of individuals (Pickart 2018, pers. comm.).

Current conditions and trend information (when available) are summarized below for the 13 extant populations (including the North Spit Humboldt Bay population that is comprised of 8 subpopulations and the largest proportion of plants throughout the species' range). Information about extirpated populations is also shown in the table, below. Additional information on current conditions of these populations, as well as information about the four extirpated populations, is found in section 7.0 of the SSA report (Service 2018, pp. 25–38).

Table of beach layia's historical and current populations, subpopulations, ownership, and abundance estimates, based on the best available scientific and commercial information.

Population	Subpopulation	Status	Ownership	2017 Acres	Most Recent Abundance Estimates (As of 2017, Unless Indicated Otherwise)
NORTH COAST ECOREGION (Humboldt County)					
Freshwater Lagoon Spit		Extant	National Park Service	3 ¹	469 ¹ (2021)
Mouth of Little River		Extirpated ²	California State Parks	0	N/A
Mouth of Mad River		Extirpated ²	Humboldt County	0	N/A
North Spit Humboldt Bay	Mad River Beach	Extant	Humboldt County, Humboldt Bay National Wildlife Refuge (Refuge)	unknown	unknown (2021)
	Bair/Woll	Extant	Refuge, Private	13 ³	unknown (2021)
	Lanphere Dunes	Extant	Refuge	33 ³	1.3 million ³ (combined with Ma-le'l North)
	Ma-le'l North	Extant	Refuge	29 ³	1.3 million ³ (combined with Lanphere Dunes)
	Ma-le'l South	Extant	Bureau of Land Management (BLM)	48 ³	2.1 million ³
	Manila North	Extant	Friends of the Dunes, Manila Community Services District	82 ³	1.4 million ³
	Manila South	Extant	Private	47 ³	unknown (2021)
	Samoa/Eureka Dunes	Extant	BLM, City of Eureka	49 ³	6.7 million ³
Elk River		Extant	City of Eureka	15 ³	468,000
South Spit Humboldt Bay		Extant	California Department of Fish and Wildlife (CDFW), BLM	83 ³	6.1 million ³
North Spit Eel River		Extant	CDFW	37 ³	4.7 million ³
South Spit Eel River		Extant	Wildlands Conservancy	1.5 ³	11,307 ⁴
McNutt Gulch		Extant	Private	1 ⁵	unknown (2021)
Mouth of Mattole River		Extant	BLM	27 ²	3.1 million ⁶
NORTH COAST ECOREGION (Marin County)					
Point Reyes NS		Extant	National Park Service	146 ⁷	2.7 million ⁷
CENTRAL COAST ECOREGION (San Francisco County)					
San Francisco		Extirpated		0	N/A
CENTRAL COAST ECOREGION (Monterey County)					
Point Pinos		Extirpated ⁸	City of Pacific Grove	0	Extirpated ³
Asilomar State Beach		Extant	California State Parks	0.17 ⁹	1,541 ⁹
Indian Village Dunes		Extant	Private	0.55 ¹⁰	199 ¹¹ (2018)
Signal Hill Dunes		Extant	Private	1 ⁵	unknown (2021)
SOUTH COAST ECOREGION (Santa Barbara County)					
Vandenberg SFB		Extant	Department of Defense	2.8 ¹² (2019)	11,902 ¹² (2019)

¹Census and mapping conducted by the National Park Service for both acreage (Julian 2017, pers. comm.) and abundance information (Julian 2021, pers. comm.).

²Source is the California Natural Diversity Database (CNDDDB), 2017.

³Mapping and population estimate conducted by the Arcata Fish and Wildlife Office, 2017.

⁴Census conducted by the Arcata Fish and Wildlife Office (Goldsmith 2017, pers. obs.).

⁵Actual amount of occupied habitat not determined; conservative estimate.

⁶Estimate based on average density from monitoring data collected by BLM (Hassett 2017, pers. comm.).

⁷Point Reyes NS, mapping from 2001–2003 and 2017 sampling conducted in Abbots Lagoon area (Parsons 2017, pers. comm.).

⁸Presumed extirpated information by CNDDB 2017.

⁹Mapping and census conducted by California State Parks (Gray 2017, pers. comm.).

¹⁰Mapping conducted as part of a capstone project by a student at Monterey Bay State University (Johns 2009).

¹¹Estimate provided by consultant (Dorrell-Canepa 2018).

¹²Mapping and acreage census conducted most recently in 2019 (ManTech SRS Technologies Inc. 2020, pp. 46–47).

Freshwater Lagoon Spit Population

This is the northern-most population of beach layia, which was discovered during spring 2000, in northern Humboldt County at Redwood National Park, currently encompassing approximately 3 acres (ac) (1.2 hectares (ha)) (Julian 2017, pers. comm.) and 469 plants (Julian 2021, pers. comm.). A census of the population has been conducted every year since 2000, and results indicate the population and individual patches fluctuate substantially, with a peak of 11,110 plants recorded in 2003, and as few as 263 plants in 2014 (Julian 2017, pers. comm.) (see figure 14 in the SSA report). The overall trend of this population is declining, likely due to drought conditions and high cover of native grasses (e.g., red fescue (*Festuca rubra*)) adversely affecting its resource needs (i.e., reduction of area of sparse vegetative cover and sunlight).

North Spit Humboldt Bay Population

Mad River Beach Subpopulation: The Mad River Beach subpopulation is the northern-most subpopulation (one of eight) within the North Spit Humboldt Bay population (hereafter referred to as “North Spit”). There is little information available for this subpopulation, which resides on Humboldt County-owned land south of the mouth of the Mad River, as well as the nearby Humboldt Bay National Wildlife Refuge-owned Long parcel. Beach layia is fairly abundant and widely distributed within the dune mat habitat in this area (Goldsmith 2018, pers. obs.). However, the vegetation community is dominated by invasive, nonnative species including European beachgrass (*Ammophila arenaria*), annual grasses (ripgut brome (*Bromus diandrus*) and quaking grass (*Briza maxima*)), and yellow bush lupine (*Lupinus arboreus*) (Goldsmith 2018, pers. obs.). The subpopulation is conservatively estimated to encompass approximately 1 ac (0.4 ha), although abundance, distribution, and trend information is unknown. Suitable habitat is limited due to overstabilization caused by a heavy invasion of invasive, nonnative

species. No efforts to restore ecosystem function are currently under way, nor does the County or Refuge have any restoration planned at this time.

Bair/Woll Subpopulation: This subpopulation occurs on the Refuge-owned Bair parcel and privately owned Woll parcel; acquisition and restoration of the entire subpopulation is a high priority for the Refuge (Refuge 2013, p. 2). The majority of the area is dominated by nonnative, invasive species including European beachgrass, iceplant (*Carpobrotus edulis* and *C. chilensis*), yellow bush lupine, and annual grasses (Pickart 2018, pers. comm.). To date, restoration has occurred on the southwest corner of the Bair parcel. The subpopulation encompasses approximately 13 ac (5.3 ha), although abundance and trend information, and adequacy of resource needs—beyond the visible reduction of sparse vegetative cover—are unknown.

Lanphere Dunes Subpopulation: This subpopulation occurs on the Lanphere Dunes Unit of the Refuge and encompasses a conservative estimate of approximately 33 ac (13 ha) (Service 2017, unpublished data). Restoration has been underway since the 1980s, including removal of invasive plants in an effort to restore ecosystem function. Ongoing nonnative species removal/maintenance appears necessary in this area to ensure that beach layia's resource needs are met. Over the years, this population of beach layia has responded positively to restoration actions and negatively to lack of rainfall in the winter months (see figure 15 in the SSA report). In 2017, abundance was estimated for both Lanphere Dunes and Ma-le'l North (see below) at approximately 1 million individual plants (Pickart 2017, pers. comm.).

Ma-le'l North Subpopulation: This subpopulation resides directly south of the Lanphere Dunes on the Ma-le'l North Dunes Unit of the Refuge and comprises the northern end of the Ma-le'l Cooperative Management Area (CMA), the southern portion of which is cooperatively owned/managed by BLM (see *Ma-le'l South Subpopulation*, below). Nonnative plants (i.e., European beachgrass, annual grasses, iceplant, and yellow

bush lupine) require continued control to maintain the open/sparse vegetative cover and adequate sunlight needs that beach layia relies on. The total subpopulation area is approximately 29 ac (11.7 ha) (Service 2017, unpublished data).

Ma-le'l South Subpopulation: Extending immediately south of the Ma-le'l North subpopulation, the Ma-le'l South subpopulation is approximately 48 ac (19.4 ha), had an estimate of approximately 2 million individuals in 2017, and is owned/managed by BLM. Restoration has produced positive results in favor of beach layia persistence, although periodic maintenance of nonnative, invasive plants is necessary (Wheeler 2017, pers. comm.) to ensure the open/sparse vegetative cover resource need that beach layia relies on. Additionally, the best available data indicate this subpopulation is less abundant during drought years (2012–2015), followed by a positive spike in abundance following a winter of substantial rainfall (Wheeler 2017, pers. comm.) (see also figure 16 in the SSA report). The results of this subpopulation's monitoring (i.e., that beach layia is less abundant during drought years and more abundant following winters with heavy rainfall) are likely representative of the species across its entire range, based on the best available data to date regarding the species' ecology and life-history characteristics.

Manila North Subpopulation: This subpopulation encompasses two areas within close proximity to each other on lands owned/managed by the Manila Community Services District (CSD) and the nonprofit organization known as Friends of the Dunes. The total estimated subpopulation (both areas) was approximately 1.4 million individuals in 2017, and occupies approximately 82 ac (33 ha). Efforts have been made to remove nonnative, invasive species, but the efforts have not been consistent and many areas have been re-invaded. Active management is needed to ensure the availability of open/sparse vegetative cover and adequate sunlight needs that beach layia relies on.

Manila South Subpopulation: This subpopulation is immediately south of the Manila North subpopulation but resides on private property, encompassing approximately

47 ac (19 ha) as reported most recently in 2017 (Service 2017, unpublished data). The area is dominated with nonnative, invasive European beachgrass, iceplant, and annual grasses. Abundance and trend information, and adequacy of resource needs—beyond the visible reduction of area of sparse vegetative cover—are unknown.

Samoa/Eureka Dunes Subpopulation: This subpopulation is the southern extent/limit of the North Spit (Humboldt Bay) population, encompassing approximately 49 ac (20 ha) on lands owned/managed by both BLM and the City of Eureka, and was estimated to include more than 6 million individuals in 2017. The BLM lands occupied by the species are managed to provide both an Endangered Species Protection Area and an open OHV use area. The remainder of the City's occupied habitat includes an additional OHV use area, an industrial zoned area containing an operational airport facility, and an 84-ac (34-ha) parcel under conservation easement known as the Eureka Dunes Protected Area held by the Center for Natural Lands Management. Some of this subpopulation has been restored; however, nonnative, invasive species continue to envelop open areas where beach layia plants occur. Some monitoring data recently available indicate the protected areas harbor a higher density of beach layia compared to the OHV area, including increased density of beach layia over the past 2 years, which correlates with increased precipitation over this same time frame (BLM 2016b). Similar to the monitoring results discussed for the Ma-le'l South subpopulation, above, the results of this subpopulation's monitoring (i.e., beach layia occurring at higher densities in the restored, protected areas compared to heavily impacted OHV areas, and high densities of beach layia plants correlating with years that have heavy annual rainfall) are likely representative of the species across its entire range, based on the best available data to date regarding the species' ecology and life-history characteristics.

Elk River Population

This population is owned and managed by the City of Eureka on the east shore of Humboldt Bay at the mouth of Elk River (see figure 8 in the SSA report). The spit is approximately 1.2 mi (1.9 km) long by up to 0.1 mi (0.16 km) wide, and beach layia occupies approximately 15 ac (6 ha) and was estimated to include 468,000 individuals in 2017 (Service 2017, unpublished data). Trend information is not available, although the most recent survey in 2017 indicates the area is dominated by nonnative, invasive European beachgrass (Goldsmith 2017, pers. obs.).

South Spit Humboldt Bay Population

The 5-mi (8-km) stretch of dune that supports beach layia extends south from Humboldt Bay's entrance to the base of Table Bluff (see figure 8 in the SSA report). The majority of this population is owned by the California Department of Fish and Wildlife (CDFW) as the Mike Thompson Wildlife Area, and the remainder is owned by BLM, which also manages the entire population (BLM 2014b, p. 3). The best available information suggests this population has increased in size since 2003, currently encompassing 83 ac (34 ha) with a population estimate of approximately 6 million plants (Service 2017, unpublished data). The steady increase in occupied beach layia habitat over time is due to the continued restoration effort to remove nonnative, invasive European beachgrass and iceplant (BLM 2014b, p. 7; Wheeler 2017, pers. comm.). Additionally, monitoring data available from two plots established in 2008 indicate increased density of beach layia following restoration, decreased density during recent drought years, and a subsequent increased density with high levels of annual precipitation (BLM 2014b, p. 15). These monitoring data suggest that beach layia density increases dramatically following restoration, that density settles to a more moderate level as native plants fill in the previously invaded habitat, and that density is also strongly correlated to rainfall.

North Spit Eel River Population

Located immediately south of the South Spit Humboldt Bay population, this population encompasses 37 ac (15 ha) of conserved lands within the CDFW's Eel River Wildlife Area and was estimated to include 4.7 million individuals in 2017 (Service 2017, unpublished data). The area is dominated by nonnative, invasive species including European beachgrass, iceplant, yellow bush lupine, and annual grasses. Trend information and adequacy of resource needs—beyond the visible reduction of area of sparse vegetative cover—are unknown.

South Spit Eel River Population

On the south side of the Eel River mouth, this population occurs on an area owned and managed by the Wildlands Conservancy, encompassing approximately 1.5 ac (0.6 ha) of occupied beach layia habitat and 11,307 plants as recorded in 2017 (Service 2017, unpublished data). It is likely that beach layia occurs in other areas of the property, although additional survey data do not yet exist. The area harbors nonnative, invasive European beachgrass that is reducing the availability of open sandy areas for beach layia to persist.

McNutt Gulch Population

This population was discovered in 1987, on private property near the mouth of McNutt Gulch. Varied numbers of plants have been recorded, ranging from 200 to 500 plants (CNDDDB 2017; Imper 2018, pers. comm.), although a complete survey has not yet occurred. The occupied area is estimated to be less than 1 ac (0.4 ha) (Imper 2018, pers. comm.). A comparison of current and historical aerial photos indicate encroachment of European beachgrass. At this time, there is no beach layia trend information available.

Mouth of Mattole River Population

This is the southern extent of the known beach layia populations within Humboldt County. This population occupies approximately 27 ac (11 ha) within part of the King Range National Conservation Area and was estimated to include 3.1 million individuals

in 2017 (Hassett 2017, pers. comm.). The area is owned and managed by BLM and is located 35 mi (56 km) south of the entrance to Humboldt Bay. Monitoring data available from 2017 indicate this population had a spike in abundance that year compared to the previous year (estimated to be 725,000 individuals) that correlates to an increase in precipitation (Hassett 2017, pers. comm.).

Point Reyes Population

The next known population of beach layia to the south is located in Marin County, 200 mi (322 km) south of Humboldt Bay, in the dunes between Kehoe Beach Dunes and the Point Reyes lighthouse at Point Reyes (Service 1998, p. 44; figure 11 in the SSA report). This large dune system contains approximately 146 ac (59 ha) of dunes occupied by beach layia within 14 geographically concentrated areas, based on mapping conducted since 2001 (Point Reyes 2010, unpaginated). However, some of those areas were no longer occupied in 2017 (Goldsmith 2017, pers. obs.). The population was estimated to be 2.7 million in 2017, although varying levels of survey intensity over the years hamper our ability to track population trends (Parsons 2017, pers. comm.).

However, sampling conducted from 2015–2017 in the Abbots Lagoon area, which includes recently restored areas, estimate increasing abundance (Parsons 2017, pers. comm.), which also correlates with an increase in precipitation. Restoration is ongoing and includes removal of nonnative, invasive European beachgrass and iceplant, which occur at various densities throughout the 14 subpopulations (Parsons 2017, pers. comm.).

Asilomar State Beach Population

The northern-most extant population in Monterey County was previously thought to be extirpated but was rediscovered in 1990 (Service 1998, p. 44). Since the time of the first survey effort in 1994, in which 192 plants were found, subsequent survey efforts found the abundance to remain relatively static within the same geographical footprint (Service 2011, p. 22; Gray 2017, pers. comm.). In 2017, the occupied beach layia habitat

consisted of a sparse layer of native dune mat vegetation with no presence of nonnative, invasive species (Dorrell-Canepa 2017, pers. comm.), and the population appears consistently present when climate conditions are favorable (Gray 2018, p. 3). Monitoring is ongoing. Counts of this population from 2017 total 1,541 plants within 0.17 ac (688 square meters) (Gray 2017, pers. comm.); this 2017 count is the highest on record for this population, possibly correlated with the high amount of rainfall during the germination period. Additional survey results include total counts of 287 plants in 2019, 442 plants in 2020, and 54 plants in 2021 (Allen 2021, pers. comm.), noting the lower counts since 2000 coincide with drought conditions. Overall, this population appears to be stable given its consistent year-to-year presence and relative protection from threats, including accounting for the expected lower count numbers detected during drought conditions/years.

Indian Village Dunes Population

The second of three populations in Monterey County, the Indian Village Dunes population occurs on restored dune habitat owned by the Pebble Beach Company. The most recent survey efforts for this population include information for 2009 (1,783 plants), 2017 (1,200 plants), and 2018 (199 plants), the latter of which is 83 percent lower plant abundance than what was expressed during the 2017 monitoring efforts (Dorrell-Canepa 2018, pers. comm.). The overall area where the species occurs is approximately 0.55 ac (0.2 ha) (Johns 2009, entire). Drought conditions existed during 2018, which may have contributed to a lower abundance during that year; however, with the absence of long term data, correlations with covariates related to population trends are not possible to make with certainty. No additional information on distribution and abundance trends is available from 2019 to present. This area is preserved through a conservation easement, although there is no management plan, funding, or requirement for additional monitoring

or restoration work. Given the unknowns surrounding the population's current abundance, additional surveys and possibly recovery efforts are warranted.

Signal Hill Dunes Population

This southern-most population within Monterey County is located less than 1 mi (1.6 km) south of the Indian Village Dunes population and is also owned by Pebble Beach Company. No recent survey information exists. The best available information is from a 2001 survey effort indicating plants occurring in five semi-isolated areas (Zander Associates 2001, p. 7), likely encompassing less than 1 ac (0.4 ha). No information is known regarding adequacy of the area to meet the species' resource needs.

Vandenberg SFB Population

The southern-most population of beach layia occurs on Vandenberg SFB in Santa Barbara County, separated by a distance of approximately 235 mi (378 km) from the Signal Hill Dunes population. This area receives less annual rainfall than the Central and North Coast Ecoregions (i.e., 14 in (36 cm) as compared to 20 in (51 cm) and 38 in (96 cm), respectively) (NOAA 2017). Although surveys do not occur annually, information is available for 2012, 2016, 2017, and 2019 for all known occupied habitat. The most recent (2019) census includes both acreage occupied and abundance information, resulting in 2.8 ac (1.1 ha) and 11,902 individual plants, indicating a 43 percent increase in population abundance compared to 2017 survey information (ManTech SRS Technologies, Inc. 2020, pp. 46–47). Due to varying levels of survey effort, there is no beach layia population trend information for this entire population, although the number of beach layia within a restoration area on the south side of the Vandenberg SFB demonstrates wide fluctuations in population size from year to year, which is often correlated to the amount of rainfall (see table 4 in the SSA report). Although restoration of beach layia habitat on Vandenberg SFB has occurred and is expected to continue into the future, it is highly stabilized due to the presence of nonnative, invasive species,

including iceplant, European beachgrass, and veldt grass (*Ehrharta erecta*) (Schneider and Calloway 2017, p. 14; ManTech SRS Technologies, Inc. 2020, p. 49), thus reducing the open sandy areas that beach layia relies on.

Summary of Factors Affecting the Species

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for listing species, reclassifying species, or removing species from listed status. “Species” is defined by the Act as including any species or subspecies of fish or wildlife or plants, and any distinct vertebrate population segment of fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). The Act defines an “endangered species” as a species that is in danger of extinction throughout all or a significant portion of its range, and a “threatened species” as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

The Act requires that we determine whether any species is an “endangered species” or a “threatened species” because of any of the following factors:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species’ continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals

of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We must consider these same five factors in downlisting a species from endangered to threatened. Under our regulations at 50 CFR 424.11(c) and (d), we may downlist a species if, after a review of the species' status, the best available scientific and commercial data indicate that the species no longer meets the definition of an endangered species, but that it meets the definition of a threatened species.

For the purposes of this analysis, we evaluate whether or not beach layia meets the Act's definition of an "endangered species" or a "threatened species," based on the best scientific and commercial information available. We use the term "threat" to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term "threat" includes actions or conditions that directly affect individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term "threat" may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an "endangered species" or a "threatened species." In determining whether a species meets either definition, we must evaluate all identified threats by considering the species' expected response and the effects of the threats—with regard to those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species and then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats with regard to those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines

whether the species meets the Act's definition of an "endangered species" or a "threatened species" only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term "foreseeable future," which appears in the statutory definition of "threatened species." Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as we can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

In our determination, we correlate the threats acting on the species to the factors in section 4(a)(1) of the Act. Our analysis includes examining: (1) The threats at the time of listing in 1992 (or if not present at the time of listing, the status of the threat when first detected); (2) conservation actions that have been implemented to meet the downlisting criteria (see also **Recovery and Recovery Plan Implementation**, below) or that otherwise mitigate the threat; (3) the current level of impact that each threat may have on the species or its habitat; and (4) the likely future impact of threats on beach layia.

As stated previously, at the time of listing (57 FR 27848; June 22, 1992), we determined that human-induced disturbances (particularly OHV activity, but also other disturbances from agriculture, pedestrians, development, etc.) were significant threats to beach layia, resulting in ongoing negative population or rangewide impacts; thus, we determined that the best available information indicated that the species was in danger of extinction throughout all of its range. Since that time, these activities have been significantly reduced, especially OHV activity, with records of the species subsequently demonstrating positive responses in abundance. Additionally, significant areas have been set aside as preserves, conservation areas, and conservation easements.

This current analysis considers the beneficial influences on beach layia, as well as the potential risk factors (i.e., threats) that are either remaining or new and could be affecting beach layia now or in the future. In this rule, we will discuss in detail only those factors that could meaningfully impact the status of the species. The primary risk factors affecting beach layia are the present and threatened modification or destruction of its habitat from overstabilization/competition with invasive species (Factor A from the Act), modification of its habitat from changing climate conditions (Factor E), modification of its habitat from human-influenced erosion/high level of disturbance (e.g., recreation) (Factor A), and modification of its habitat from vertical land movement/shoreline erosion (i.e., varying levels of uplift and subsidence, as described below) (Factor A). Additional threats to the species include development (Factor A) and herbivory/disease (Factor C); however, our analysis shows that while these threats may be impacting individual beach layia plants, they are not having species-wide impacts. For a full description of all identified threats, refer to chapter 8 of the SSA report (Service 2018, pp. 38–48).

Overstabilization/Competition with Invasive Species

Areas described as overstabilized in this document (and discussed in detail in section 8.2.1 of the SSA report (Service 2018, pp. 41–43)) have high vegetation cover

and restricted sand movement either due to presence of nonnative, invasive species or presence of species (native or nonnative) that move in after an area is stabilized by invasive species. Overstabilization caused by invasive species, as defined here, is a different ecological process from natural succession in which native vegetation changes over time from the semi-stable dune mat community to more stabilized communities. Both overstabilization and natural succession have a negative impact on the abundance of beach layia because the species requires open sand to colonize an area (see *Ecology, Habitat, and Resource Needs of Beach Layia*, above). At this time, the best available information indicates that large portions of the range of beach layia have been made unsuitable by overstabilization and competition with both native and nonnative, invasive species (Service 2017, pp. 41–43). However, dune systems that are naturally succeeding often still contain areas of semi-stable dunes—although they may shift over time—that are suitable for beach layia.

One population—the Freshwater Lagoon Spit—is the only beach layia population that is currently impacted by stabilization caused by native species, i.e., red fescue (Samuels 2017, pers. comm.). No measures are in place to address the stabilization effects.

The remainder of beach layia’s range is subject to past introduction and invasion of its habitat by a variety of nonnative, invasive plant species (Service 1998, p. 45), which is one reason why the species was listed as an endangered species (57 FR 27848; June 22, 1992). These nonnative species adversely affect the long-term viability of coastal dune plants, including the entire distribution of beach layia (with the exception of the Freshwater Lagoon Spit population, as described above), through either direct competition for space (56 FR 12318, March 22, 1991, p. 12323); stabilization of the dunes (56 FR 12318, March 22, 1991, p. 12318); or, in some cases, enrichment of the soils, which then stimulate invasion by other aggressive species (Maron and Connors

1996, p. 309; Pickart *et al.* 1998, pp. 59–68). Nonnative, invasive species are currently present at all populations throughout the species' range, although to a lesser degree at the Lanphere Dunes, Ma-le'l North, and Ma-le'l South subpopulations; the Mouth of Mattole River population; and Asilomar State Beach and Indian Village Dunes populations due to restoration activities.

The most common invasive species (European beachgrass, iceplant, yellow bush lupine, and ripgut brome) in dune systems throughout the range of beach layia are described in section 8.2.1.1 of the SSA report (Service 2018, pp. 42–43). The high level of invasion throughout the range of beach layia suggests these taxa will continue to invade beach layia habitat (i.e., invasive plants occur at varying densities within and adjacent to all extant populations), necessitating routine and long-term management actions. Many of the invasive plants have been mapped within the various dune systems occupied by beach layia (Johns 2009, p. 24; Point Reyes 2015, p. i; Mantech SRS Technologies 2018, p. 1), and there have been efforts for their removal or control (Service 2011, p. 10; Point Reyes 2015, p. 105; Mantech SRS Technologies 2018, p. 1). However, much potentially suitable habitat for beach layia remains to be restored, as identified in the 1992 recovery plan (i.e., the portion of the species' range where the majority of occurrences are including the Mouth of the Mad River, the greater part of the North and South Spits of Humboldt Bay, Elk River Spit, the North and South Spits of the Eel River, McNutt Gulch, as well as Point Reyes, Signal Hill Dunes, and Vandenberg SFB (recovery criterion 2, see section 11.0 in the SSA report)), in addition to routine maintenance to control this threat into the future.

Overall, overstabilization and competition with native or nonnative, invasive species are reducing the availability of sandy soils with sparse vegetative cover, causing beach layia throughout its range to compete for open sandy space, sunlight, and rainfall during its winter germination period. Efforts at some locations to remove invasive species

(such as, but not limited to, European beachgrass, iceplant, yellow bush lupine, and ripgut brome) that are adversely affecting resources needed by beach layia are reducing these negative influences and thus have improved the species' current resiliency at many populations. However, the ability of land managers to continue manage the ongoing threat of invasive species into the future is uncertain.

Changing Climate Conditions

Changes in weather patterns have been observed in recent years and are predicted to continue (Frankson *et al.* 2017, p. 1). Changes can include extreme events such as multi-year droughts or heavy rain events (Frankson *et al.* 2017, pp. 2–5). All of these have the potential to remove, reduce, and degrade habitat, as well as remove individual plants, reduce germination and survival rates, and reduce fecundity. The best available scientific and commercial information at this time does not indicate how historical changes in climate may have affected beach layia, although recent drought conditions have had a negative impact on population size (BLM 2016a, p. 6; ManTech SRS Technologies 2016, p. 29).

The best available information indicates that recent drought conditions (2012–2016, 2018, 2020, and currently in 2021) negatively influence the abundance of beach layia (e.g., lack of rainfall for germination, reduced fecundity, desiccation during dry periods in the growing season) across the species' range (e.g., BLM 2016a, p. 6; BLM 2014b, p. 16; Pickart 2017, pers. comm.; Gray 2017, pers. comm.; ManTech SRS Technologies 2018, p. 9). Following the 2012–2016 drought period, a subsequent increase in abundance was seen in 2017, corresponding with the increase in rainfall at the end of this multi-year drought period, indicating the seedbank for the species has some ability to withstand multi-year droughts. However, at this point in time, the full longevity of the seedbank is unknown; therefore, it is impossible to predict whether the species could withstand even longer drought periods or whether drought conditions could reach a

point at which the seedbank would no longer be viable. All that can be reasonably concluded from the available information is that multi-year droughts have a negative effect on beach layia abundance, reducing above-ground vegetative growth, and that the seedbank for the species appears to be able to withstand at least 4 years of consecutive drought and then regenerate new vegetative growth once more normal rainfall patterns return (noting a tendency for the species to experience a spike in abundance following a drought).

The Intergovernmental Panel on Climate Change (IPCC) states it is likely that the intensity and duration of droughts will increase on a regional to global scale (IPCC 2014, p. 53). We used the California Climate and Hydrology Change Graphs, a graphing tool that presents climate and hydrology data from the California Basin Characterization Model (BCM) dataset (Flint *et al.* 2013, entire), to analyze the potential impact of drought on beach layia in the future. Four future climate scenarios demonstrate a range of precipitation and temperatures projected by the 18 scenarios available from the BCM. We chose to use the climatic water deficit calculations because they take into account changes in air temperature, solar radiation, and evapotranspiration, and can be used as an estimate of drought stress on plants (Stephenson 1998, p. 857).

There are large uncertainties with respect to future precipitation levels; some scenarios predict a hot dry future, while others predict a hot wet future. While climatic water deficit magnitudes vary across the models, the trends are consistent in that all projections indicate increasing values. Climatic water deficit values, both historical (1931–2010) and projected (2021–2050), are higher in watersheds in the Central and South Coast Ecoregions. The South Coast Ecoregion has the highest values and is therefore considered to be the most vulnerable to stress caused by drought, followed by the Central Coast Ecoregion, and then the Point Reyes population at the southern end of the North Coast Ecoregion. The three watersheds in Humboldt County (which encompass all of the North Coast Ecoregion populations except Point Reyes) are least likely to be stressed by drought, both currently and

into the future, but the trend in climatic water deficit is still increasing. See section 8.2.2.1 of the SSA report for additional discussion regarding impacts associated with drought.

While no definitive conclusions can be drawn about the potential for drought alone to result in permanent loss of beach layia populations, a compounding factor with changing climate conditions is the relationship to invasive plant species. Many of the invasive species that negatively affect beach layia or its habitat, such as European beachgrass and iceplant, are drought tolerant (Hertling and Lubke 2000, pp. 522–524; Hilton *et al.* 2005, pp. 175–185; Earnshaw *et al.* 1987, pp. 421–432). During a multi-year drought, it is possible that invasive species could persist and spread into areas where beach layia declined, resulting in less open space habitat for germination of beach layia when a sufficient amount of rainfall returns (assuming the seedbank survives).

The high level of abundance of beach layia in 2017 suggests that the potential for invasive species to take over habitat and exclude beach layia regeneration is not a significant threat, at least for drought periods up to 4 years in duration. However, the likelihood of the increased duration and intensity of drought into the future increases the potential for this outcome, which could be particularly problematic for those populations in the Central and South Coast Ecoregions.

In addition to drought, rising sea levels caused by changing climate conditions can lead to removal or reduction of habitat, and the removal of individual plants, seedbanks, and whole populations. However, an analysis conducted using representative concentration pathway (RCP) 8.5 and local sea level rise projections for 2050 based on the methodology developed by Kopp *et al.* (2014, pp. 384–393) as presented in Rising Seas in California (Griggs 2017, entire) suggests that rising seas are not likely to significantly influence beach layia into the foreseeable future, and it is unknown how changes in sea levels may have affected the species in the past. Likewise, projections for the lower emission scenario indicate that rising seas under RCP 4.5 are not likely to

negatively influence beach layia (Griggs 2017, entire). For more information on the analysis conducted on the effects of sea level rise, please refer to section 10.3.2 of the SSA (Service 2017, pp. 52–58).

Erosion/High Level of Disturbance

Erosion of soil in a dune system can be caused by many factors, and any form of erosion or heavy soil disturbance can result in the removal of beach layia habitat, individual plants, and seedbank. Erosion and disturbance of beach layia habitat discussed in this document is associated with high levels of disturbance caused by pedestrian, equestrian, OHV, and grazing activity.

First, the best available information indicates that trampling from both pedestrian and equestrian activities occur at insignificant levels at most populations throughout beach layia's range, with the possible exception of the Signal Hill Dunes population on the Monterey Peninsula (Service 2011, p. 11), although that current level of impact is unknown. Beach layia has a strong preference for moderately disturbed habitat adjacent to roads and trails (whether pedestrian or equestrian) in what otherwise would be unoccupied habitat (Service 2011, p. 11). Dispersed equestrian use has been allowed at the South Spit Humboldt Bay population since BLM began management of the area in 2002, and beach layia abundance has remained high, suggesting that dispersed equestrian use, at least where large areas of occupied habitat are concerned, is compatible with large populations (Wheeler 2017, pers. comm.).

Second, OHV activity within beach layia habitat across the species' range is significantly reduced since the time of listing. Most occupied habitat is restricted from OHV use with the exception of five populations in Humboldt County. Beach layia abundance is lower within riding areas as compared to preserved areas that are closed to OHV use and managed to reduce threats to the species (BLM 2016a; BLM 2016b; Hassett 2017, pers. comm.; see also figure 17 in the SSA report). Additionally, within the

OHV riding area, beach layia is restricted to the edges of trails, and the remainder of the habitat is overstabilized and dominated by invasive vegetation. It is possible that the higher beach layia abundance in the protected areas of the study could have more to do with invasive species management than eliminating the direct impacts of OHV use (Wheeler 2017, pers. comm.).

Finally, livestock trampling was identified as a threat when beach layia was listed (57 FR 27848; June 22, 1992). Livestock trampling previously occurred at the Mouth of Mattole River population, but fencing was replaced in 1997, thereby eliminating this threat (BLM 2014a, p. 5). Additionally, livestock were removed from the South Spit Eel River population that occurs on the Wildlands Conservancy Preserve (Allee 2018, pers. comm.). At this time, the only populations that are exposed to livestock are the McNutt Gulch population (Imper 2018, pers. comm.) and some portions of the Point Reyes population (Parsons 2018, pers. comm.). Observations made at Point Reyes suggest that livestock trampling is negatively impacting portions of the population there (Goldsmith 2018, personal observation). The current status of the McNutt Gulch population is unknown.

Overall, the best available scientific and commercial information suggests that human-induced disturbances are not resulting in significant, negative, population-wide or rangewide impacts given most beach layia habitat is under some level of protection and responds well to slight disturbance. However, some risk to the species' viability remains for some populations in the North Coast Ecoregion because of trampling or crushing of individuals plants.

Vertical Land Movement/Shoreline Erosion

Uplift or subduction (i.e., the geological process that occurs at convergent boundaries of tectonic plates where one plate moves under another and is forced to sink due to gravity into the mantle) both during and between seismic events can affect whether

a beach/shoreline is prograding (i.e., advancing toward the sea as a result of the accumulation of waterborne sediment) or eroding. Vertical land movement (VLM) is site-specific and is influenced by a number of factors. Direction and magnitude differ depending on location, although most areas around Humboldt Bay, including areas near beach layia habitat, are subsiding (Patton *et al.* 2017, pp. 26–27). The San Andreas Fault, which runs along the eastern edge of Point Reyes and runs parallel to the Monterey Peninsula, regularly experiences plate movements. Removal or reduction of both habitat and individual plants can be caused by sea level rise associated with subduction while uplift may counterbalance those effects. Sudden movements associated with earthquakes can cause tsunamis, which have the potential to remove habitat and whole populations in one event.

The portion of shoreline where beach layia occurs at Point Reyes has a high to very high vulnerability index (Pendleton *et al.* 2005, pp. 3, 15), indicating that this population is subject to removal of occupied habitat caused by shoreline erosion. Similarly, the Monterey coastline where beach layia occurs has been shaped by varying levels of uplift and subsidence (Revell Coastal 2016, p. 2-1). The dunes at Asilomar are less vulnerable to erosion compared to those on the northern portion of the peninsula (EMC Planning Group 2015, figure 5). The best available information does not suggest any current or historical VLM or shoreline erosion for the Monterey Peninsula; thus, areas where beach layia occur appear relatively safe. No VLM/shoreline erosion information is available for Vandenberg SFB. While some populations are more at risk than others to lose habitat via VLM based on historical data, coastal dune habitat will always be threatened by the potential loss of large expanses of habitat caused by subduction events or tsunami.

As with many ecosystems, dunes often undergo periods of cyclic stabilization and rejuvenation (Pickart and Sawyer 1998, p. 4). Rejuvenation events can be the result of

changes in relative sea level, which in turn are attributed, at least in the past, to tectonic activity, including tsunamis (such as the following, as cited in Pickart and Sawyer 1998: Vick 1988, Pacific Watershed Associates 1991, Clarke and Carver 1992, and Komar and Shih 1993). Both uplift and subsidence can theoretically trigger reactivation of dunes, with the former potentially building or expanding dunes through increased sediment supply, while the latter can destroy dunes through increased wave action or limit the expansion of new dunes (Pickart and Sawyer 1998, p. 4). The southern end of the North Spit Humboldt Bay population and the South Spit Eel River population are particularly vulnerable to shoreline erosion (McDonald 2017, pp. 10–13).

Current Condition

The estimated abundance of beach layia is currently 30 million plants and the estimated occupied habitat is approximately 595 ac (240 ha). This is an increase of approximately 28 percent for abundance and an increase of approximately 65 percent for occupied habitat since the 2017 5-year review (Service 2011, entire).

All of the threats discussed above have the potential to negatively influence the resiliency of beach layia populations; however, the threat that currently has the greatest negative impact on populations or the species rangewide is overstabilization/competition with invasive species. This threat reduces abundance of beach layia more than any other and has the potential to have significant negative impacts to populations across the range of the species by reducing the amount of open sandy areas with sparse vegetation that it needs. Although habitat has been restored for some populations, the threat of invasive species expanding their presence throughout the species' range is always present, especially because most restored sites are near currently invaded areas, and has the potential to increase if changing climate conditions result in longer duration and higher intensity multi-year droughts. Efforts to remove nonnative or native, invasive species and reverse the effects of overstabilization are ongoing throughout the species' range

(Martinez *et al.* 2013, p. 159; BLM 2014b, p. 17; ManTech SRS Technologies 2016, p. 1; California Department of Parks and Recreation (CDPR) 2004, p. 3-14). However, these efforts are time consuming and costly. Some current management plans include restoration for some populations; however, many populations have no plans for restoration, and funding into the future is determined on an annual budgetary basis by CDPR and Vandenberg SFB. Thus, this threat is not considered to be causing a significant negative influence across the entire range of beach layia at this time, but is reasonably likely to in the foreseeable future.

Uncertainties regarding the species' ecology and current impacts (or level of impacts) to beach layia or its habitat include (but are not limited to): Defined timelines for implementation of restoration and ongoing control of nonnative, invasive species; limiting factors for the populations in Monterey County; seedbank longevity; and the optimal disturbance regime to maximize recovery efforts (see also section 9.1.2 in the SSA report (Service 2018, p. 50)).

Future Condition Projections

For the purpose of this rule, we define viability as the ability of the species to sustain populations in the wild over time. This discussion explains how the stressors associated with overstabilization/competition with invasive species, changing climate conditions, erosion/high level of disturbance (e.g., recreation), and vertical land movement/shoreline erosion will influence resiliency, redundancy, and representation for beach layia throughout its current known range using the most likely plausible scenario. The future timeframes evaluated include a range of times that cover a variety of management plans that are expected to last the next 10 to 20 years and predictions for local sea level rise in the future through the year 2050. Thus, foreseeable future for this analysis is a range from approximately 15 to 30 years from now.

Suitable occupied and unoccupied habitat is limited to coastal dune systems that are subject to modification or destruction by overstabilization/competition with nonnative and native invasive species, changing climate conditions (which can result in drought and sea level rise), erosion from various disturbance activities (e.g., recreation), and VLM/shoreline erosion (see section 6.2 in the SSA report (Service 2018, pp. 14–24)). Significant habitat modification in any portion of beach layia's range could lead to reduced population size, growth rate, and habitat quality for the affected population(s), thus resulting in a higher risk level for the species' viability into the future. Although the threats described above are generally spread throughout the species' range, the best available data indicate that the most vulnerable populations, given current and potential future impacts to availability of sparsely vegetated native dune mat habitat subject to periodic disturbance during the dormant season, include:

- *North Coast Ecoregion*—Freshwater Lagoon Spit, portions of North Spit Humboldt Bay (including the Mad River Beach, Bair/Woll, Manila South, and Samoa/Eureka Dunes subpopulations), portions of South Spit Humboldt Bay, Elk River, North Spit Eel River, South Spit Eel River, McNutt Gulch, and unrestored portions of Point Reyes;
- *Central Coast Ecoregion*—Signal Hill Dunes; and
- *South Coast Ecoregion*—Vandenberg SFB.

This includes three of the four largest areas occupied by the species in the North Coast Ecoregion (see table, above). Depending on the severity of the impacts to the resources needed by beach layia, populations or portions thereof could be lost in the future.

Populations in areas where habitat is limited or unsuitable in the future (see section 8.1 in the SSA report (Service 2018, pp. 39–41)) are likely to be more susceptible to threats that continue or worsen in the future, potentially resulting in reduced

population(s) size and growth rate. Loss of habitat caused by invasion of nonnative, invasive species is the most prominent negative influence on beach layia into the future.

The populations in the Central and South Coast Ecoregions are at the greatest at risk of declines in abundance in the future based on their small size, limited distribution and expected continued threats in the future, particularly competition with nonnative, invasive species and drought stress. No projected drought trends are available; however, extreme events, including multi-year droughts, are expected to increase in likelihood into the future (Frankson *et al.* 2017, pp. 2–5), and an analysis on climatic water deficit shows an increasing trend throughout the range of the species into the future, particularly those in the Central and South Coast Ecoregions (see section 8.2.2.1 of the SSA report).

Overall, it is likely that the most significant threat to beach layia's resiliency in the future will be continued overstabilization/competition with invasive species and, to a lesser extent, changing climate conditions, erosion/high levels of disturbance, and VLM/shoreline erosion. These threats are likely to result in a reduction in abundance of beach layia throughout its range stemming from removal, reduction, and degradation of habitat, and reduced abundance, such as from reduced germination, fecundity, and survival rates.

Many populations are likely to see a reduction in abundance of beach layia because there are no existing management activities or no management plans that provide long-term assurances that management activities will continue into the future to improve existing suboptimal habitat conditions (e.g., invasive species), especially if the species were to be delisted. Very few populations have been managed in such a way that the natural processes that create habitat for the species are able to operate unhindered (i.e., Lanphere Dunes and Ma-le'l North and South). The remaining populations are dependent on continued management into the future to improve habitat conditions.

The low abundance and limited distribution of the species in the Central and South Coast Ecoregions make those populations particularly vulnerable to stochastic events, including, but not limited to, drought. It is likely that the intensity and duration of droughts will increase on a regional to global scale (IPCC 2014, p. 53). The high likelihood of increased intensity and duration of droughts in California (Frankson *et al.* 2017, pp. 2–5) is expected to negatively influence beach layia populations throughout the species' range because rain is required for germination, but particularly in the Central and South Coast Ecoregions due to high projections of climatic water deficit in those watersheds. A compounding factor in the analysis of drought effects on beach layia is that two of the most common nonnative, invasive species that compete for habitat with beach layia—European beachgrass and iceplant—are both drought-tolerant (Hertling and Lubke 2000, pp. 522–524; Lechuga-Lago *et al.* 2016, pp. 8–9).

Resiliency, Redundancy, and Representation

To characterize beach layia's viability and demographic risks, we consider the concepts of resiliency, redundancy, and representation, and how the threats may negatively impact the resource needs that it relies on for survival and reproduction. Taking into account the impacts of the most significant threats and the potential for cumulative impacts to the resources that the species needs, our projections for future conditions are that beach layia's ability to withstand and bounce back from stochastic events (resiliency) is currently high and likely to remain so into the future. This resiliency is demonstrated by the increased abundance at most populations during a heavy rainfall year (e.g., 2017; table 2 in the SSA report (Service 2018, pp. 22–24)) that followed 4 years of drought conditions. However, this rebound in 2017 did not occur throughout all of the species' range, including at some of the smaller populations.

No significant known genetic differences exist between populations or among ecoregions, per a genetic study that indicates homogeneity across the species range

(Baldwin 2006, pp. 72–73), which suggests a low level of ability to adapt to change (representation). Currently, multiple populations throughout the historical range of the species provide adequate redundancy and a higher outlook of viability in the face of potential catastrophic events.

Of greater concern for beach layia's viability into the future is that the populations in the Central and South Coast Ecoregions are significantly smaller than the populations in the North Coast Ecoregion, thus decreasing the species' representation and redundancy in a large proportion of the species' range if these populations are lost in the future. The smaller abundance and acreage of these populations compared to the populations in the North Coast Ecoregion increases the chances of population loss in the foreseeable future, especially given the likelihood that:

(1) Overstabilization/competition with invasive species is not adequately being addressed (e.g., lack of staff and funding for invasive species control at some locations).

(2) Drought conditions are expected to worsen (continued multi-year droughts that result in reduced annual precipitation levels) across the species' range, but particularly in the Central and South Coast Ecoregions.

(3) Drought conditions can possibly benefit the abundance and spread of drought-tolerant, invasive plants that are already present and adversely impacting the resources that beach layia relies on.

See section 10.3 in the SSA report (Service 2018, pp. 52–59) for additional analysis and discussion of factors influencing the viability of beach layia in the future. Taking into account the impacts of the most significant threats and the potential for cumulative impacts to the resource needs, our projections for future conditions are that beach layia's ability to withstand and bounce back from stochastic events (resiliency) is currently high and likely to remain so into the future. Additionally, multiple populations currently spread across a wide geographic range suggest high redundancy and

representation. However, at this time, the populations in the Central and South Coast Ecoregions have lower abundance than the North Coast Ecoregion populations. Even in years with higher than normal abundance numbers, the Central and South Coast Ecoregion populations fall below the recovery goal of 5,000 individuals per population (Service 1998, p. 93). Given the lower abundance compared to the rest of the species' range and the continued threats into the foreseeable future, the species' overall ability to maintain adequate representation and redundancy into the future is low.

Recovery and Recovery Plan Implementation

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Under section 4(f)(1)(B)(ii), recovery plans must, to the maximum extent practicable, include objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of section 4 of the Act, that the species be removed from the List.

Recovery plans provide a roadmap for us and our partners on methods of enhancing conservation and minimizing threats to listed species, as well as measurable criteria against which to evaluate progress towards recovery and assess the species' likely future condition. However, they are not regulatory documents and do not substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. A decision to revise the status of a species, or to delist a species, is ultimately based on an analysis of the best scientific and commercial data available to determine whether a species is no longer an endangered species or a threatened species, regardless of whether that information differs from the recovery plan.

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all of the criteria in a recovery plan being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be accomplished.

In that instance, we may determine that the threats are minimized sufficiently and that the species is robust enough that it no longer meets the definition of an endangered species or a threatened species. In other cases, we may discover new recovery opportunities after having finalized the recovery plan. Parties seeking to conserve the species may use these opportunities instead of methods identified in the recovery plan. Likewise, we may learn new information about the species after we finalize the recovery plan. The new information may change the extent to which existing criteria are appropriate for identifying recovery of the species. The recovery of a species is a dynamic process requiring adaptive management that may, or may not, follow all of the guidance provided in a recovery plan.

In 1998, we finalized the Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan, which included recovery objectives for beach layia (recovery plan; Service 1998, pp. 43–48). All of the downlisting criteria and a portion of the delisting criteria included in the recovery plan (Service 1998) applied to the entire suite of dune plant species covered by the plan. As such, some interpretation of those criteria may be warranted to account for the specific life history or other circumstances of the species in question. Therefore, we have based our analysis on the intent of the criteria as they relate to beach layia. Based on our review of the recovery plan and the information obtained from the various management activities, surveys, and research that have occurred to date (including some new abundance information available since publication of the proposed rule in the *Federal Register* (85 FR 61684; September 30, 2020)), we conclude that the status of beach layia is improved throughout its range as a result of significant protections to preserve or conserve habitat, along with land use decisions and management activities implemented by many landowners undertaken since the time of listing. See appendix A in the SSA report for a detailed account of existing regulatory mechanisms and voluntary conservation efforts (Service 2018, pp. 75–80). Our analysis

indicates that the intent of the downlisting criteria has been met. Our summary analysis of the downlisting criteria follows:

Downlisting Criterion 1 (addresses Listing Factors A, D, and E): Habitat occupied by the species that is needed to allow delisting has been secured, with long-term commitments and, if possible, endowments to fund conservation of the native vegetation.

There has been significant improvement in the security of habitat occupied by beach layia since the recovery plan was prepared, including land acquisition by Federal agencies, State and local agencies, and nongovernmental organizations; adoption of local coastal plans under the California Coastal Act; and implementation of management plans that address the needs of the species. Of the estimated 595 ac (240 ha) of dunes habitat currently occupied by beach layia, approximately 91 percent is owned by Federal and State governmental entities or other land owners with existing resource management direction precluding development within sensitive dunes habitat. Despite the fact that not all entities managing beach layia habitat have been able to demonstrate their ability to continue management into the future, especially if the species were to be delisted, due to the significant amount of occupied dune habitat that is now on protected lands (i.e., long-term commitments of approximately 32 years, including resource management plans that contain a restoration component), and State and Federal mandates to conserve the species as long as it remains listed, we conclude that this recovery criterion has been adequately met.

Downlisting Criterion 2 (in part, addresses Listing Factors A, D and E): Management measures are being implemented to address the threats of invasive species, pedestrians, and OHVs at some sites.

The Service, BLM, National Park Service (Redwood National Park, Point Reyes), and several other land managers in the northern portion of the range, and the CDPR, Department of Defense, and several other managers in the southern portion of the range

have all instituted relevant management policies since the recovery plan was completed or since the species was listed. Those policies have reduced, and in many cases eliminated, the threats to beach layia posed by pedestrians and OHV activity, as well as reduced to a certain degree the threat of native and nonnative, invasive species. Because of the many management measures currently implemented across the range of beach layia to address the threats of pedestrians and OHVs, and the work conducted thus far to address the ongoing threat of invasive species, we conclude that this criterion has been adequately met.

Downlisting Criterion 3 (in part, addresses Listing Factor E): Monitoring reveals that management actions are successful in reducing threats of invasive, nonnative species.

Management actions over the past 12 years have reduced the threats from native and nonnative, invasive species, at least into the foreseeable future. Because of these successful invasive species management measures, we conclude that this criterion has been adequately met.

Downlisting Criterion 4 (in part, addresses Listing Factors A, D and E): Additional restored habitat has been secured, with evidence of either natural or artificial long-term establishment of additional populations, and long-term commitments (and endowments where possible) to fund conservation of the native vegetation.

Commitments by land managers across beach layia's range, as described under *Downlisting Criterion 1*, above, have resulted in secured habitat (i.e., protected from development, although native or nonnative, invasive species continue to reduce the availability of sandy soils with sparse vegetative cover) in multiple geographic areas since the recovery plan was completed. These include several protected areas on Federal, State, and local public lands, as well as land acquisition and protection (e.g., conservation easements) by nongovernmental organizations (protections are described in each population description found in section 7.0 of the SSA report (Service 2018, pp. 25–38)).

Additionally, restoration has been conducted with a commensurate response by beach layia (e.g., the creation of an Endangered Species Protection Area within the Samoa/Eureka subpopulation, North Spit Humboldt Bay, Point Reyes National Seashore, Vandenberg SFB). As a result, we conclude that this criterion has been adequately met.

Delisting Criteria

The intent of the delisting criteria has not yet been met for beach layia. The overarching goal for delisting beach layia includes removal of substantially all of the nonnative, invasive plants on the dunes where it occurs and securing written assurance of long-term support for continued management of the dunes, and monitoring (Service 1998, pp. 92–93). The overarching goal is to restore natural processes that have been disrupted by the presence of nonnative, invasive species to dune systems so that beach layia and other native plants adapted to those environments can persist into the future.

Determination of Beach Layia Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of “endangered species” or “threatened species.” The Act defines an “endangered species” as a species that is in danger of extinction throughout all or a significant portion of its range, and a “threatened species” as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of “endangered species” or “threatened species” because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

As required by the Act, we considered the five factors in assessing whether the beach layia is an endangered or threatened species throughout all of its range. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by the species. We reviewed information presented in the 2011 5-year review (Service 2011, entire), additional information that became available since the time our 2011 5-year review was completed, and other available published and unpublished information, including information available since publication of the proposed rule (85 FR 61684; September 30, 2020). We also consulted with species experts and land management staff who are actively managing for the conservation of beach layia.

We examined the following threats that may be affecting beach layia: development (Factor A), herbivory/disease (Factor C), overstabilization/competition with invasive species (Factor A), changing climate conditions (Factor E), erosion/high level of disturbance (e.g., recreation) (Factor A), and vertical land movement/shoreline erosion (Factor A). We found no threats associated with overutilization for commercial, recreational, scientific, or educational purposes, such as (but not limited to) collection of plants for scientific research (Factor B). We also considered and discussed existing regulatory mechanisms (Factor D) and voluntary conservation efforts as they relate to the threats that may affect beach layia (summarized within each threat discussion within chapters 8 and 10, and detailed in appendix A, of the SSA report, pp. 75–80).

The most significant factors influencing the viability of beach layia populations at the time of listing were displacement by nonnative, invasive vegetation; recreational uses such as OHV activities and pedestrians; and urban development (57 FR 27848, June 22, 1992; Service 1998, p. 45). At the time of the proposed downlisting rule (85 FR 61684; September 30, 2020) and currently, our analysis indicates that the level of impacts to beach layia and its habitat that placed the species in danger of extinction in 1992 (i.e.,

human-induced disturbances including OHV activity, agriculture, pedestrians, development, etc.) has substantially been reduced as a result of the significant commitments made by landowners to conserve lands and institute restoration activities at multiple populations throughout the species' range. However, the extensive spread of nonnative, invasive vegetation throughout the species' range remains a significant negative influence on the viability of the species. Additionally, the ability of the majority of landowners to continue management of habitat for the species into the future is uncertain, particularly if the species were to be delisted.

At the time of the 5-year review (2011) and currently, we have become aware of the potential for anthropogenic climate change to affect all biota, including beach layia. Available information indicates that temperatures are increasing and annual rainfall is reduced during some years within beach layia's range, resulting in prolonged drought conditions that negatively influence beach layia abundance. Beach layia's response to these changes should be monitored into the future.

Of the factors identified above, overstabilization/competition with invasive species (Factor A), changing climate conditions (Factor E), erosion/high level of disturbance (e.g., recreation) (Factor A), and vertical land movement/shoreline erosion (Factor A) are the most significant threats to the species currently and into the foreseeable future. After review and analysis of the best scientific and commercial information available regarding the threats as they relate to the five statutory factors, we find that this information does not indicate that these threats are affecting individual populations or the species as a whole across its range to the extent that they currently are of sufficient imminence, scope, or magnitude to rise to the level that beach layia is in danger of extinction throughout all of its range. This determination is based on the current estimate of approximately 30 million plants across the range of the species and the approximately two thirds of currently occupied habitat that is restored or partially restored, and because

the species is widely distributed along the coast of California.

However, our review of the best available scientific information indicates that, while the overall range has slightly increased since the time of listing (i.e., discovery of the northern-most population—Freshwater Lagoon Spit) and the abundance of the species has increased significantly since the 2011 5-year review, the anticipated trajectory of the identified threats into the foreseeable future is likely to result in a condition whereby the abundance and density of the species across the majority of its range (including the population stronghold areas in a portion of Humboldt County) are likely to be negatively impacted.

Specifically, the best available information indicates there is a likelihood of population- and rangewide-level impacts to beach layia abundance in the foreseeable future, despite beneficial management actions at some of the populations at this time. Beach layia populations across the species' range are likely to be negatively influenced predominantly from overstabilization/competition with invasive species, in conjunction with predicted drought conditions. Our analysis reveals that one or more threats continue to act on the species at the population level, likely contributing to low abundance in most years that do not experience substantial rainfall. Additionally, there is a lack of range expansion at some small populations (e.g., Asilomar State Beach, Indian Village Dunes, and Signal Hill Dunes populations), likely contributing to insufficient recruitment necessary for stable or, ideally, increasing populations. With respect to the remaining populations that are experiencing OHV and other recreation activities (noting this threat is substantially reduced with the exception of a few areas in the North Coast Ecoregion), the existing regulatory mechanisms are likely insufficient to manage the beach layia habitat specifically at the Signal Hill Dunes population. Overall, some disturbance appears compatible with large populations (Wheeler 2017, pers. comm.)

Thus, after assessing the best available information, we conclude that beach layia

is not currently in danger of extinction, but it is likely to become in danger of extinction within the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity v. Everson*, 2020 WL 437289 (D.D.C. Jan. 28, 2020) (*Center for Biological Diversity*), vacated the aspect of the Final Policy on Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act’s Definitions of “Endangered Species” and “Threatened Species” (79 FR 37578; July 1, 2014) that provided that the Service does not undertake an analysis of significant portions of a species’ range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, whether there is any portion of the species’ range for which both (1) the portion is significant; and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species’ range.

Following the court’s holding in *Center for Biological Diversity*, we now consider whether there are any significant portions of the species’ range where the species is in danger of extinction now (i.e., endangered). In undertaking this analysis for the beach layia, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered.

The statutory difference between an endangered species and a threatened species is the time horizon in which the species becomes in danger of extinction; an endangered species is in danger of extinction now, while a threatened species is not in danger of extinction now but is likely to become so in the foreseeable future. Thus, we considered the time horizon for the threats that are driving the beach layia to warrant its classification as a threatened species throughout all of its range. We examined the following threats: overstabilization/competition with invasive species, changing climate conditions, erosion/high level of disturbance (e.g., recreation), and vertical land movement/shoreline erosion, including cumulative effects. While some of these threats currently exist throughout the range of the species (e.g., the presence of invasive species, recreational impacts), it is the anticipated future increase in overstabilization/competition with invasive species, exacerbated by climate change-influenced drought that is driving the threatened status of the species.

The best scientific and commercial data available indicate that the time horizon on which this heightened threat to beach layia from drought-influenced overstabilization/competition with invasive species, and beach layia's negative response to that heightened threat, is likely to occur is the foreseeable future. In addition, the best scientific and commercial data available do not indicate that this heightened threat is more immediate in any portions of the species' range. Therefore, we determine that the beach layia is not in danger of extinction now in any portion of its range, but that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This is consistent with the courts' holdings in *Desert Survivors v. Department of the Interior*, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018), and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d , 946, 959 (D. Ariz. 2017).

Therefore, on the basis of the best available scientific and commercial information, we are reclassifying beach layia as a threatened species throughout all of its range in accordance with sections 3(20) and 4(a)(1) of the Act.

Determination of Status

Our review of the best available scientific and commercial information indicates that beach layia does not meet the definition of an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act, but does meet the definition of a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act. Therefore, we are downlisting beach layia from an endangered species to a threatened species, and this change will be reflected on the List of Endangered and Threatened Plants.

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is classified, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within the range of the species being listed. Because we are listing this species as a threatened species, the prohibitions in section 9 will not apply directly. We are, therefore, adopting a set of regulations to provide for the conservation of the species in accordance with the Act's section 4(d), which also authorizes us to apply any of the prohibitions in the Act's section 9 to a threatened species. The 4(d) rule, which includes a description of the kinds of activities that will or will not constitute a violation, complies with our July 1, 1994, policy.

II. Final Rule Issued Under Section 4(d) of the Act

Background

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide for the conservation of species listed as threatened. The U.S. Supreme Court has noted

that statutory language like “necessary and advisable” demonstrates a large degree of deference to the agency (see *Webster v. Doe*, 486 U.S. 592 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to us when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary’s discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife, or include a limited taking prohibition (see *Alsea Valley Alliance v. Lautenbacher*, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council v. National Marine Fisheries Service*, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana v. Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, “once an animal is on the threatened list, the Secretary has an almost infinite number of options available to [her] with regard to the permitted activities for those species. [She] may, for example, permit taking, but not importation of such species, or [she] may choose to forbid both taking and importation but allow the transportation of such species” (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising this authority under section 4(d), we have developed a species-specific 4(d) rule that is designed to address beach layia's specific threats and conservation needs. Although the statute does not require us to make a "necessary and advisable" finding with respect to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of beach layia. As discussed above under **Determination of Beach Layia Status**, we conclude that beach layia is no longer at risk of extinction but is still likely to become so in the foreseeable future, primarily due to the identified threats of overstabilization/competition with invasive species and drought conditions, in addition to loss of habitat and plants at some locations from recreational disturbance and erosion (e.g., shoreline erosion, vertical land movement). The provisions of this 4(d) rule promote conservation of beach layia by making it unlawful to remove and reduce to possession beach layia from Federal land. The provisions of this rule are one of many tools that we will use to promote the conservation of the beach layia.

Provisions of the 4(d) Rule

This 4(d) rule enhances the conservation of beach layia by prohibiting detrimental activities and allowing activities that benefit the species.

This 4(d) rule provides for the conservation of beach layia by prohibiting, for any person subject to the jurisdiction of the United States, the following activities, except as otherwise authorized or permitted: Import or export; removing and reducing to possession beach layia from areas under Federal jurisdiction; maliciously damaging or destroying the species on any area under Federal jurisdiction; or removing, cutting, digging up, or damaging or destroying the species on any area under Federal jurisdiction in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law; delivering, receiving, carrying, transporting, or

shipping the species in interstate or foreign commerce in the course of a commercial activity; and selling or offering for sale the species in interstate or foreign commerce.

As discussed above under **Determination of Beach Layia Status**, several factors are affecting the status of beach layia. A range of activities have the potential to impact the beach layia, including the loss of habitat and plants at some locations from recreational disturbance. Regulating these activities will help preserve the species' remaining populations, slow their rate of decline, and decrease synergistic, negative effects from other stressors.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened plants under certain circumstances. Regulations governing permits for threatened plants are codified at 50 CFR 17.72, which states that the Service Director may issue a permit authorizing any activity otherwise prohibited with regard to threatened species. The regulations also state that the permit will be governed by the provisions of 50 CFR 17.72 unless a species-specific 4(d) rule applicable to the plant is provided at 50 CFR 17.73 to 17.78. We interpret that second sentence to mean that permits for threatened species are governed by the provisions of 50 CFR 17.72 unless a species-specific 4(d) rule provides otherwise. On August 27, 2019, we published a final rule (84 FR 44753) revising 50 CFR 17.71 to remove the prior default extension of most of the prohibitions for activities involving endangered plants to threatened plants. We did not intend for those revisions to limit or alter the applicability of the permitting provisions in 50 CFR 17.72, or require that every 4(d) rule spell out any permitting provisions that apply to that species. To the contrary, we anticipate that permitting provisions will generally be similar or identical for most species, so applying the provisions of 50 CFR 17.72 unless a 4(d) rule provides otherwise would likely avoid substantial duplication. Moreover, this interpretation brings 50 CFR 17.72 in line with the comparable provision for wildlife at 50 CFR 17.32, which states that a permit will be

governed by the provisions of 50 CFR 17.32 unless a species-specific 4(d) rule applicable to the wildlife, appearing at 50 CFR 17.40 to 17.48, provides otherwise. Under 50 CFR 17.72 with regard to threatened plants, a permit may be issued for the following purposes: For scientific purposes, to enhance propagation or survival, for economic hardship, for botanical or horticultural exhibition, for educational purposes, or other activities consistent with the purposes and policy of the Act. Additional statutory exemptions from the prohibitions are found in sections 9 and 10 of the Act.

The Service recognizes the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Services shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency which is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, will be able to conduct activities designed to conserve beach layia that may result in otherwise prohibited activities without additional authorization.

We recognize the beneficial and educational aspects of activities with seeds of cultivated plants, which generally enhance the propagation of the species, and therefore satisfy permit requirements under the Act. We intend to monitor the interstate and foreign commerce and import and export of these specimens in a manner that will not inhibit such activities, providing the activities do not represent a threat to the species' survival in the wild. In this regard, seeds of cultivated specimens will not be regulated provided that

a statement that the seeds are of “cultivated origin” accompanies the seeds or their container.

Nothing in this 4(d) rule changes in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or our ability to enter into partnerships for the management and protection of the beach layia. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between us and other Federal agencies, where appropriate.

III. Summary of Comments and Recommendations

Peer Reviewer Comments

In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of seven appropriate specialists regarding the SSA report. We received responses from four specialists, which informed the SSA report and this final rule. The purpose of peer review is to ensure that our listing determinations are based on scientifically sound data, conclusions, and analyses. The peer reviewers have expertise in the biology and ecology of the species, including the threats that the species faces.

We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the beach layia. The peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions to improve the SSA report and final rule. Peer reviewer comments are incorporated into the SSA report and this final rule as appropriate; no significant, substantive issues were identified with our analysis and SSA report.

Public Comments

We received one public comment in response to the proposed rule. We reviewed this comment for substantive issues and new information regarding the proposed rule. A summary of the substantive issues raised in the comment follows.

(1) *Comment:* The commenter questioned whether the 1998 recovery plan is working sufficiently, or if there are plans to write a new recovery plan.

Our Response: Recovery plans provide a road map with detailed site-specific management actions for private, Tribal, Federal, and State cooperation in conserving listed species and their ecosystems. A recovery plan provides guidance on how best to help listed species, including beach layia, to achieve recovery, but it is not a regulatory document. At this time, we do believe the current recovery plan has been successful for addressing beach layia's needs, as demonstrated by the various recovery actions that have been implemented to date (see **Recovery and Recovery Plan Implementation**, above). We currently have no plans to revise the existing recovery plan, but we do intend to continue to evaluate the species' status into the future via periodic status reviews to assess ongoing conservation efforts and ensure that species protections are appropriately classified under the Act.

(2) *Comment:* The commenter questioned if it is the Service's goal to delist beach layia in the future.

Our Response: As with all listed species, the Service's ultimate goal is to recover the species to the point that it no longer requires the protections of the Act and can be delisted. We have worked, and continue to work, cooperatively with landowners across beach layia's range to further the conservation of the species, with the overarching goal that when the species no longer meets the Act's definition of a threatened species, we can propose to remove beach layia from the List of Endangered and Threatened Plants. Key to that assessment will be ensuring that this conservation-reliant species has management commitments in place to address the threat of nonnative invasive species into the future.

(3) *Comment:* The commenter asked what caused the threats to beach layia to be reduced compared to the level of impacts identified when it was listed in 1992.

Our Response: The reduction in threats impacting beach layia is due to the conservation efforts implemented by Federal, State, local, and private entities. Examples of the conservation efforts are the removal of both native and nonnative, invasive species from many populations across the species' range, which have expanded suitable habitat for beach layia and appear to be the most beneficial conservation action for the species. Also, protecting lands from development has contributed to the reduction in threats. Protected lands include a significant amount of occupied dune habitat that receive long-term commitments of approximately 32 years, including resource management plans that contain a restoration component to address some threats, and State and Federal mandates to conserve the species as long as it remains listed. Additionally, prohibiting OHV use in some of the areas supporting beach layia populations has reduced the overall level of both short-term and long-term impacts from these recreational activities. For more information, see the discussions under **Recovery and Recovery Plan Implementation** and **Determination of Beach Layia Status**, above.

(4) *Comment:* The commenter requested that we develop and display dynamic, interactive maps in proposed rules to compare pre-listing status and current species status. For example, the commenter suggested that it would help the public to see beach layia population “numbers” at the time of listing compared to current information.

Our Response: At this time, requirements and limitations for publication in the *Federal Register* prevent interactive mapping tools for proposed and final rules. However, detailed qualitative and quantitative historical and current information on species abundance and distribution is available in the SSA report (Service 2018, chapters 5 and 6, pp. 13–38). The SSA report and supporting information are available on the Internet at <https://www.regulations.gov> under Docket No. FWS-R8-ES-2018-0042.

(5) *Comment:* The commenter inquired about the cost to the public of promulgating and implementing the beach layia proposed downlisting rule.

Our Response: Section 4(b)(1)(A) of the Act requires us make listing determinations “solely on the basis of the best scientific and commercial data available.” The Act does not allow us to consider the economic or other impacts of listing, whether over the short term, long term, or cumulatively. Therefore, we may not consider information concerning economic or management (implementation) impacts when making listing determinations.

IV. Required Determinations

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

Government-to-Government Relationship With Tribes

In accordance with the President’s memorandum of April 29, 1994, (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior’s manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly

with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We have determined that no Tribes will be affected by this rule because there are no Tribal lands or interests within or adjacent to beach layia habitat.

References Cited

A complete list of all references cited in the SSA report and this rulemaking is available on the internet at <https://www.regulations.gov> under Docket No. FWS-R8-ES-2018-0042 and upon request from the Field Supervisor, Arcata Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the U.S. Fish and Wildlife Service Species Assessment Team and the Arcata Fish and Wildlife Office.

Lists of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

Regulation Promulgation

Accordingly, we hereby amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. In § 17.12, amend the table in paragraph (h) by revising the entry for “*Layia carnosa*” under FLOWERING PLANTS in the List of Endangered and Threatened Plants to read as follows:

§ 17.12 Endangered and threatened plants.

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(h) * * *

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules
FLOWERING PLANTS				
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<i>Layia carnosa</i>	Beach layia	Wherever found	T	57 FR 27848, 6/22/1992; 87 FR [insert <i>Federal Register</i> page where the document begins], [Insert date of publication in the <i>Federal Register</i>]; 50 CFR 17.73(b). ^{4d}
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3. Amend § 17.73 by adding paragraph (b) to read as follows:

§17.73 Special rules—flowering plants.

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(b) *Layia carnosa* (beach layia).

(1) *Prohibitions.* The following prohibitions that apply to endangered plants also apply to *Layia carnosa* (beach layia). Except as provided under paragraph (b)(2) of this section and §§ 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.61(b) for endangered plants.

(ii) Remove and reduce to possession from areas under Federal jurisdiction, as set forth at § 17.61(c)(1) for endangered plants.

(iii) Maliciously damage or destroy the species on any areas under Federal jurisdiction, or remove, cut, dig up, or damage or destroy the species on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law, as set forth at section 9(a)(2)(B) of the Act.

(iv) Interstate or foreign commerce in the course of commercial activity, as set forth at § 17.61(d) for endangered plants.

(v) Sell or offer for sale, as set forth at § 17.61(e) for endangered plants.

(2) *Exceptions from prohibitions.* The following exceptions from prohibitions apply to beach layia:

(i) The prohibitions described in paragraph (b)(1) of this section do not apply to activities conducted as authorized by a permit issued in accordance with the provisions set forth at § 17.72.

(ii) Any employee or agent of the Service or of a State conservation agency that is operating a conservation program pursuant to the terms of a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by that agency for such purposes, may, when acting in the course of official duties, remove and reduce to possession from areas under Federal jurisdiction members of beach layia that are covered by an approved cooperative agreement to carry out conservation programs.

(iii) You may engage in any act prohibited under paragraph (b)(1) of this section with seeds of cultivated specimens, provided that a statement that the seeds are of “cultivated origin” accompanies the seeds or their container.

Martha Williams,
Director,
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